



ERCOT Response to the DOE Questions Regarding the Energy Policy Act 2005

The following responses are prepared by the Electric Reliability Council of Texas (ERCOT) to respond to the questions raised by the Department of Energy regarding a study mandated by Energy Policy Act of 2005:

1) What are the procedures now used in your region for economic dispatch? Who is performing the dispatch (a utility, an ISO or RTO, or other) and over how large an area (geographic scope, MW load, MW generation resources, number of retail customers within the dispatch area)?

The Electric Reliability Council of Texas (ERCOT) functions as an Independent System Operator (ISO) and it is the organization which is responsible for insuring the reliable planning and operation of the electric system and administering a competitive deregulated wholesale and retail market in the ERCOT Region. ERCOT is one of the ten Regional Reliability Councils in North American Electric Reliability Council (NERC) and one of the largest control areas in North America. The scope of ERCOT region is approximately 200,000 square miles (which is 75 percent of the land area in Texas), 85 percent of the state's electric load, 69,000 megawatts of generation and 60,279 megawatts peak load. In the ERCOT region, there are about 7 million retail customers.

Each year, Commercially Significant Constraints (CSCs)¹, associated Congestion Zones and zonal shift factors are determined for ERCOT. Once approved by the ERCOT Board, the CSCs and Congestion Zones will be used by the ERCOT dispatch process for the next year. In 2005, ERCOT has six CSCs and five Congestion Zones.

During Real Time Operations, ERCOT performs economic dispatch in the following manner:

- (1) All Qualified Scheduling Entities (QSEs) submit balanced schedules for each 15 minute interval reflecting their planned generation and load obligation by Congestion Zone. These schedules reflect bilateral agreements between generators and load serving entities outside the purview of ERCOT and account for over 95% of ERCOT's energy requirements. QSEs representing generation can also submit zonal Balancing Energy up bids and zonal Balancing Energy down bids to ERCOT.
- (2) ERCOT economic dispatch process utilizes Zonal Shift Factors, zonal energy schedules submitted by the QSEs, the ERCOT load forecast and zonal Balancing Energy Bids to estimate the zonal balancing energy deployments needed to

¹ To get more information on the definitions of CSC, QSE, TAC, please refer to ERCOT Protocols at: <http://www.ercot.com/tac/retailisoadhoccommittee/protocols/keydocs/draftercotprotocols.htm>



maintain the ERCOT wide system energy balance and keep the power flows within CSC Limits².

- (3) Considering the zonal energy schedules and estimated zonal balancing energy deployments, ERCOT utilizes unit specific instructions to manage Local (intra-zonal) Congestion.³
- (4) After the unit specific instructions are determined, ERCOT clears the zonal Balancing Energy Market to maintain system energy balance and keep the CSC flows within the CSC Limits. The balancing energy bids from all the generators are considered and are cleared in order of lowest to highest bid until the required amount of balancing energy is procured.
- (5) QSEs have the obligation to deploy their generation resources to meet their submitted schedules as modified by the zonal balancing energy and unit specific deployment instructions, issued by ERCOT.

2) Is the Act's definition of economic dispatch (see above) appropriate? Over what geographic scale or area should economic dispatch be practiced? Besides cost and reliability, are there any other factors or considerations that should be considered in economic dispatch, and why?

ERCOT believes the economic dispatch definition in the Energy Policy Act of 2005 is appropriate. In most of the deregulated electricity markets in North America, Economic Dispatch is the practice of the operation of generation facilities to produce energy required to reliably serve customers at the lowest as bid⁴ cost, constrained by any operational limits of generation and transmission facilities.

ERCOT has no opinion on the specific geographic scale or area limit for the practice of economic dispatch. As long as adequate generation is physically connected by adequate transmission facilities to load within a geographic area, economic dispatch can be practiced.

Reliability and cost are the only two factors that are considered in the ERCOT economic dispatch practices. There are no other major factors that must be considered in the economic dispatch process, even though different region can have different methods for their economic dispatch.

² These CSC limits are determined by ERCOT System Operators considering real time power system operational conditions.

³ Local congestions are those transmission constraints that are not defined as CSCs.

⁴ Under a competitive deregulated electricity market, generators usually can bid their marginal costs to the ISO and the objective of the ISO economic dispatch process is to minimize the as bid costs, while respecting the operational limits of the generation and transmission facilities.



3) How do economic dispatch procedures differ for different classes of generation, including utility-owned versus non-utility generation⁵? Do actual operational practices differ from the formal procedures required under tariff or federal or state rules, or from the economic dispatch definition above? If there is a difference, please indicate what the difference is, how often this occurs, and its impacts upon non-utility generation and upon retail electricity users. If you have specific analyses or studies that document your position, please provide them.

In ERCOT, all of the generation can provide balancing energy bids to the Balancing Energy Market and the economic dispatch does not differentiate utility owned generation and non-utility owned generation.

ERCOT's actual operational practices follow the formal procedures as specified in ERCOT Protocols and the Operating Guides.

4) What changes in economic dispatch procedures would lead to more non-utility generator dispatch? If you think that changes are needed to current economic dispatch procedures in your area to better enable economic dispatch participation by non-utility generators, please explain the changes you recommend.

In ERCOT security constrained economic dispatch in a largely bi-lateral wholesale market has been a fundamental operational practice. Non-utility generation has full participation in the ERCOT market and economic dispatch process. As a result, we believe no more change is needed in our area to increase the non-utility generation participation in the economic dispatch process.

5) If economic dispatch causes greater dispatch and use of non-utility generation, what effects might this have – on the grid, on the mix of energy and capacity available to retail customers, to energy prices and costs, to environmental emissions, or other impacts? How would this affect retail customers in particular states or nationwide? If you have specific analyses to support your position, please provide them to us.

When economic dispatch causes greater dispatch and use of non-utility generation, it might have the following effects:

The System Operator would have more generation resources available to maintain grid reliability and this also could change the generation pattern across the grid;

⁵ In Texas, Senate Bill 7 was enacted by the Texas Legislature on May 27, 1999. Senate Bill 7 mandated the functional unbundling of transmission and generation. As a result, many traditional utilities in Texas were separated into transmission companies and generation companies. In this response, when a generation entity does not have any transmission and distribution asset, it is considered as a non-utility generation entity.



To many retail customers, more energy and capacity could become available;

The overall electric power system production cost should be reduced and this could correspondingly reduce the energy prices;

From region to region, the impact of economic dispatch on environmental emissions can be different depending upon the fuel mix, system topology and environmental regulations. ERCOT does not have data to support the evaluation of environmental emissions in Texas resulting from economic dispatch;

6) Could there be any implications for grid reliability – positive or negative – from greater use of economic dispatch? If so, how should economic dispatch be modified or enhanced to protect reliability?

As long as the operational limits of the generation and transmission facilities are respected in the economic dispatch process, the greater use of economic dispatch by itself should not have negative impact on grid reliability⁶. From ERCOT's operational experience, the electric grid reliability can be maintained while economic dispatch is used to dispatch both utility and non-utility generation.

⁶ However, if non-utility generation is less likely to have their governor response in place, greater dispatch of non-utility generation might introduce operational challenges in the system frequency control.